

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Patent Application No. 10/668,451

Confirmation No. 2349

Applicant: Williams et al.

Filed: September 22, 2003

TC/AU: 3736

Examiner: Jeffrey Gerben Hoestra

Docket No.: 229278 (Client Reference No. 01-0094)

Customer No.: 23460

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Appellants request review of the rejection, dated February 27, 2009, in the above-identified application. No amendments are being filed with this request. This request is being filed with a notice of appeal. An appeal brief has not yet been filed. This Pre-Appeal Brief Request For Review is submitted for the reasons stated on the attached sheets.

Remarks

Appellants traverse the continued rejection of the pending claims. In particular, Appellants traverse the rejection of:

1. Claims 1, 3, 4, 7, 8, 9, 12, 14, and 17-19 as obvious under 35 U.S.C. §103 over U.S. Patent No. 5,795,325 (Valley) in view of U.S. Patent No. 5,591,142 (Van Erp);

2. Claims 5, 6, 10, 11, 15, 16, and 20 as obvious under 35 U.S.C. §103 over Valley in view of Van Erp and U.S. Pat. No. 5,374,782 (Taylor).

In an effort to minimize the issues addressed during this requested review, Appellants focus upon the rejection of independent claim 1 (reciting elements similar to independent claim 12) due to clear errors in the Office Action regarding this claim. The complete set of pending claims is provided in an Appendix attached hereto.

Summary of Claimed Subject Matter

Independent **claim 1** pertains to a sensor catheter (see, generally FIGS. 1-2, catheter 12). A proximal end of the catheter 12 is adapted to be coupled to a processing unit 14. A sensor assembly 16 is disposed at a distal end of the catheter 12. A plurality of wires 18, coupled to the sensor assembly 16, carry signals along the length of the catheter 12.

The plurality of wires 18 connected to the sensor assembly 16 are divided into at least first and second wire bundles (e.g., 24 and 26) to reduce electromagnetic interference (e.g., cross-talk) between the sets of signals carried by the wires (see, page 5, lines 9-25). The first and second wire bundles (e.g. 24 and 26) are further twisted together and disposed within an outer conductor sheath (30). *See*, FIGS. 4-6; and page 6, lines 22-24.

Discussion of the Rejection of Independent Claim 1 (and 12) over Valley in view of Van Erp

Appellants submit that the Office Action's rejection of **independent claim 1 (and 12)** as obvious over Valley in view of Van Erp is clearly in error. In particular, the Office Action has not provided a *prima facie* case of obviousness with regard to claim 1 since the combination of Valley and Van Erp do not disclose to one skilled in the art: (1) modifying Valley's catheter to

include multiple bundles of wires coupled to **the same sensor assembly**, or (2) modifying Valley to include **multiple bundles** that are **twisted together** while at the same time twisting the individual wires within each bundle. By not identifying each recited element of claim 1 in the prior art, the Office Action has not even presented a threshold case of obviousness.

Claim 1 recites a catheter with an arrangement of wires used to connect a sensor assembly at the distal end of the catheter to its proximal end. The claimed arrangement of wires has the following characteristics: (a) the wires connected to the sensor assembly are arranged in at least two different wire bundles, (b) **the wires in each wire bundle are twisted together** to reduce electromagnetic interference, and (c) **the wire bundles are twisted together** and disposed within an outer conductor sheath.

Valley, upon which the Office Action primarily relies, discloses three separate/distinct sensors that are connected to signal wires that are provided in the form of: parallel pairs, twisted pairs or coaxial cables. *See*, Valley, col. 19, lines 22-26. However, Valley does not disclose that **multiple bundles** (i.e. separate pairs of signal wires) are in turn **twisted together** as recited in claim 1 (and 12). Nor does Valley disclose that the wire bundles are disposed within an outer conductor sheath as also recited in claim 1 (and 12). The Office Action acknowledges that these elements are missing from Valley. *See*, Office Action dated March 27, 2009 at Section 6. Although not admitted in the Office Action, Valley does not disclose multiple bundles of wires connected to the **same sensor assembly**. Instead, Valley discloses that each bundle is connected to a different sensor assembly. *Id.*, col. 17, lines 23-30 and lines 52-59, and col. 18, lines 47-51 (signal wires 334 and 336 are connected to pressure transducer 330, signal wires 339 and 341 are connected to proximal pressure transducer 331, and signal wires 352 and 354 are connected to balloon pressure monitoring transducer 350).

The Office Action relies upon Van Erp to address the admitted shortcomings in the disclosure of Valley. Appellants agree that Van Erp does disclose a catheter with multiple bundles of wire 10. *See* Van Erp, FIG. 3. However, each bundle is connected to a separate sensor (e.g. 5 and 9). *See* FIGs. 2A and 2B. Thus, the combined teachings of Valley and Van Erp do not disclose "a plurality of wires coupled to the sensor assembly, wherein the plurality of wires are divided into first and second bundles" as recited in Appellants' claim 1. At best, Valley

and Van Erp teach multiple bundles of wire wherein each bundle is connected to a separate and distinct sensor assembly.

Moreover, while Van Erp discloses that the wire bundles can be wrapped (or woven) around a catheter core in an overlapping fashion, Van Erp specifically teaches that, in such an arrangement, *it is important for the wires within each bundle to be disposed side by side and in parallel*. See *id.*, col. 3, lines 54-58 ("The side by side arrangement of the metal wires 11 in each bundle 10 with no single wire in a bundle overlying another single wire in the bundle enables the tubular body of the catheter 3 to have a very thin wall.") In this regard, Van Erp teaches away from the claimed arrangement wherein the individual wires within a bundle are twisted together. See *KSR Int'l Co. v. Teleflex Inc. et al.*, 127 S.Ct. 1727, 1740 (2007) ("when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious") citing *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 51-52 (1966).

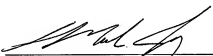
Thus, a person of ordinary skill in the art fairly reading Valley in view of Van Erp would, at best, incorporate the multiple bundles of wire from Van Erp into the catheter design of Valley by wrapping the bundles around a central core instead of "twisting" the bundles together as recited in claim 1. No *reason* has been provided as to why such express teachings as set forth in Van Erp would be disregarded by a person of ordinary skill in the art. See *KSR Int'l* 127 S.Ct. at 1742 (noting that it may be "important to identify a reason that would have prompted a person of ordinary legal skill in the art to combine the elements as the new invention does.")

Because the combination of Valley and Van Erp does not teach multiple bundles of wire connected to a single sensor assembly and does not fairly teach twisting together individual wires within multiple bundles of wire (and in fact discloses the desirability of wrapping the bundles in a way that provides a low profile), Appellants request that the rejection of independent claim 1 (and 12) be reversed. For at least the same reasons, Appellants request reversal of the rejection of each dependent claim.

Conclusion

For the reasons stated herein above, the presently pending claims are patentable over the prior art presently known to Appellants. Appellants therefore request reversal of the presently pending rejection of claims 1, 3-12 and 14-20.

Respectfully submitted,



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Date: August 27, 2009

Claims Appendix

1. A sensor catheter, comprising:
a catheter having proximal and distal ends, a proximal end of the catheter adapted to be coupled to a processing unit;
a sensor assembly disposed at the distal end of the catheter; and
a plurality of wires extending from the proximal end of the catheter to the distal end of the catheter, the plurality of wires coupled to the sensor assembly,
wherein the plurality of wires are divided into first and second wire bundles, each of the wires in the first and second wire bundles twisted together to reduce electromagnetic interference between the wires, and wherein the plurality of wires carry control signals transmitted to the sensor assembly and sensor signals transmitted from the sensor assembly, and wherein the first and second wire bundles are twisted together and disposed within an outer conductor assembly sheath having an inner wall forming a space containing the first and second wire bundles of the plurality of wires.
2. (Cancelled)
3. The sensor catheter of claim 1 wherein the plurality of wires further are divided into a third wire bundle, each of the wires in the third wire bundle twisted together to reduce electromagnetic interference between the wire bundles.
4. The sensor catheter of claim 1, wherein the first wire bundle consists of a pair of wires.
5. The sensor catheter of claim 4, wherein the pair of wires is twisted together in a clockwise direction.
6. The sensor catheter of claim 4, wherein the pair of wires is twisted together in a counter-clockwise direction.
7. The sensor catheter of claim 1, wherein the second wire bundle consists of a pair of wires.
8. The sensor catheter of claim 3, wherein the third bundle consists of three wires.

9. The sensor catheter of claim 3, wherein the first, second and third wire bundles are twisted together and disposed within the outer conductor assembly sheath.

10. The wiring arrangement of claim 1, wherein the wires in the first wire bundle are twisted together in a first direction and the wires in the second wire bundle are twisted together in a second, substantially opposite direction.

11. The wiring arrangement of claim 1, wherein the wires in the first wire bundle are twisted together in a first direction and the wires in the second wire bundle are twisted together in the first direction, and the first and second wire bundles are twisted together in a second direction substantially opposite to the first direction.

12. A sensor catheter, comprising:
a flexible elongate member having proximal and distal ends, a proximal end of the flexible elongate member adapted to be coupled to a processing unit;
a sensor assembly disposed at the distal end of the flexible elongate member; and
a plurality of wires extending from the proximal end of the flexible elongate member to the distal end of the flexible elongate member, the plurality of wires coupled to the sensor assembly,

wherein the plurality of wires are divided into first and second wire bundles, each of the wires in the first and second wire bundles twisted together to reduce electromagnetic interference between wires in the first and second wire bundles, and wherein the plurality of wires carry control signals transmitted to the sensor assembly and sensor signals transmitted from the sensor assembly, and wherein the first and second wire bundles are twisted together and disposed within an outer conductor assembly sheath having an inner wall forming a space containing the first and second wire bundles of the plurality of wires.

13. (Cancelled).

14. The sensor catheter of claim 12 wherein the plurality of wires further are divided into a third wire bundle, and each of the wires in the third wire bundle are twisted together.

15. The sensor catheter of claim 12, wherein the wires in the first wire bundle are twisted together in a clockwise direction.

16. The sensor catheter of claim 15, wherein the wires in the second wire bundles are twisted together in a counter-clockwise direction.

17. The sensor catheter of claim 12, wherein at least one of the first and second wire bundles consists of a pair of wires.

18. The sensor catheter of claim 14, wherein the third wire bundle consists of three wires.

19. The sensor catheter of claim 14, wherein the first, second and third wire bundles are twisted together and disposed within the outer conductor assembly sheath.

20. The wiring arrangement of claim 12, wherein the wires in the first wire are twisted together in a first direction and the wires in the second wire bundle are twisted together in the first direction, and the first and second wire bundles are twisted together in a second direction substantially opposite to the first direction.